CLIL

STEAM

MATERIALS • UDA 3: Paper

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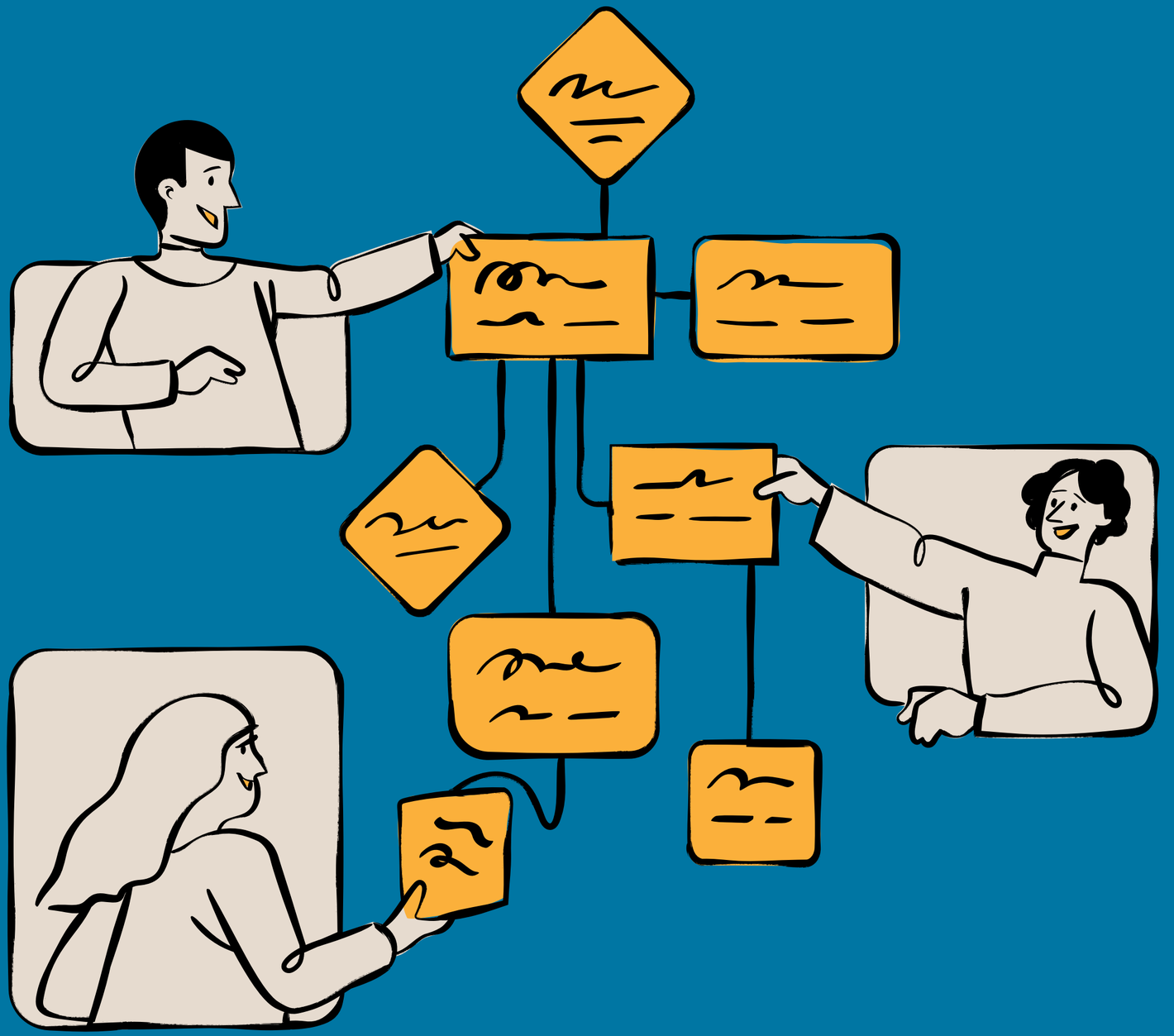
1. CREATE YOUR OWN MAP

Have a look at the mind maps in the following slides, then sketch your own version in your exercise book.



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PAPER

ORIGIN AND COMPOSITION

- Cellulose fibre
- Contains adhesives and dyes

CHARACTERISTICS AND PROPERTIES

- Hygroscopicity (ability to absorb moisture)
- Strength
- Grammage (paper weight per square metre)
- Texture
- Flexibility

INDUSTRIAL PRODUCTION

- Continuous paper machine process
- Mixture of water and plant fibres
- Mechanical or chemical processing
- Incorporation of recycled paper
- Pressing and drying on a long conveyor belt
- Wound into rolls or cut into flat sheets

PAPER

MAIN USES OF PAPER AND CARDBOARD

- Writing and printing
- Packaging
- Hygiene and sanitary products
- Art and decoration
- Industrial applications

ENVIRONMENTAL SUSTAINABILITY

- Sustainable forest management
- Use of certified raw materials
- Separate waste collection and recycling

2. CREATE YOUR OWN TEST

a. Indicate whether the following statements are true (T) or false (F).

1. Paper consists solely of cellulose fibres.

T F

2. Grammage refers to the percentage of cellulose.

T F

3. Paper has high porosity.

T F

4. Paper is easily recyclable.

T F

5. The paper and cardboard industry requires relatively little energy and consumes minimal water.

T F

2. CREATE YOUR OWN TEST

Match each term with its definition

HYGROSCOPICITY

FLEXIBILITY

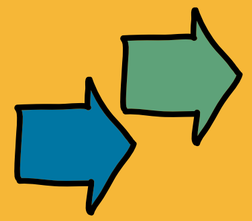
TEXTURE

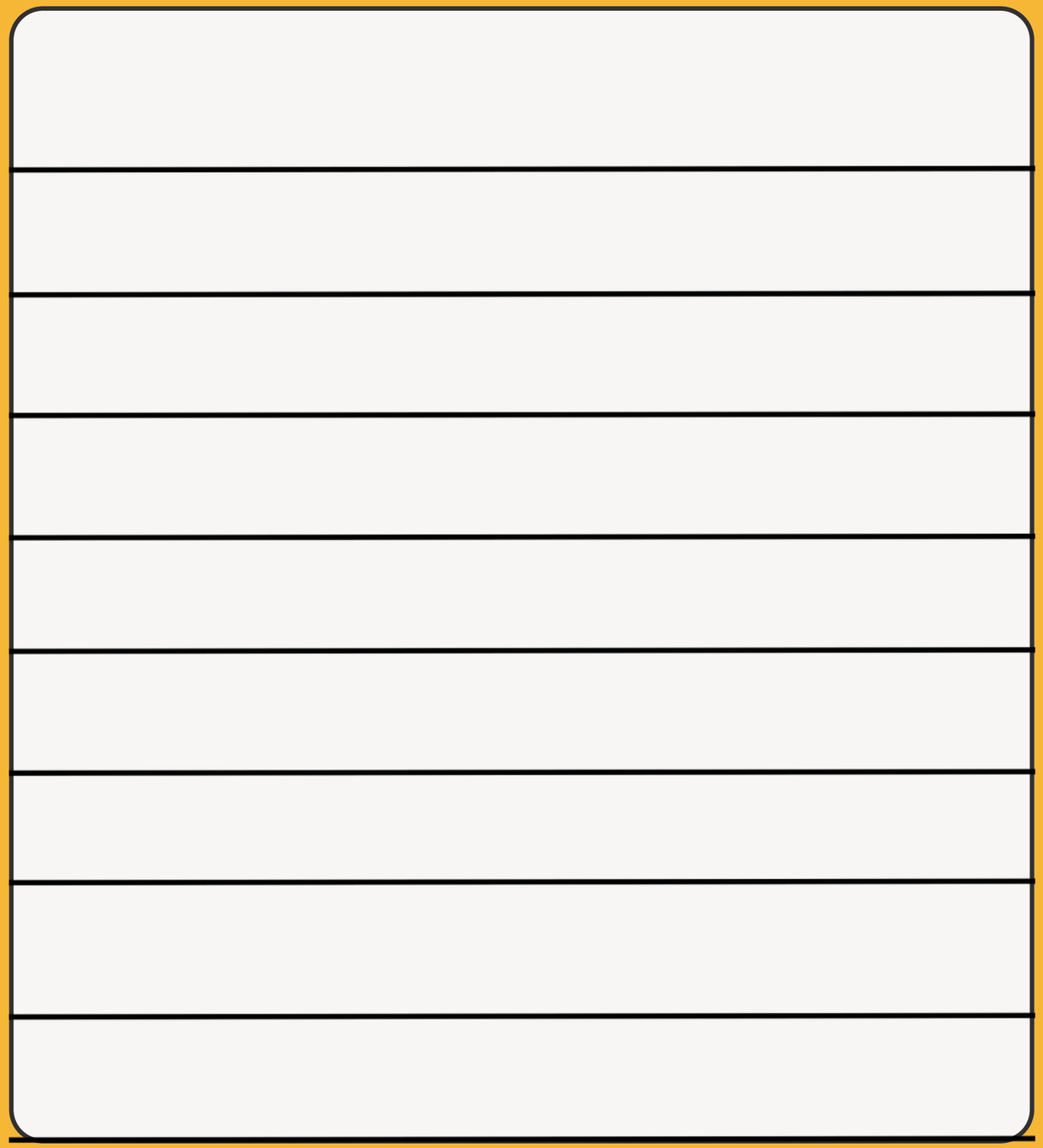
STRENGTH

- The ability to be bent and shaped easily.
- The ability to absorb and allow the passage of air and liquids.
- The quality of the paper’s surface, which can be smooth or rough.
- The ability to withstand tension, tearing, and compression.

2. CREATE YOUR OWN TEST

b. Create Five New True/False Questions to Share with the Class





3. PAPER AND CARDBOARD SAMPLE COLLECTION

IMAGINE YOU ARE A SALES REPRESENTATIVE PROMOTING PRODUCS FROM A PAPER MILL. TO SUPPORT YOUR PRESENTATION, YOU NEED TO PREPARE A SAMPLE COLLECTION.

Instructions:

- Gather a variety of samples of paper and cardboard.
- Take a large drawing sheet (33 × 48 cm).
- Measure and divide the sheet into at least eight sections.
- In each section, attach a different type of paper or cardboard, cut to an appropriate size.
- Write a short caption for each sample, describing its characteristics and uses.
- Present your sample collection to the class.

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4.DATA ON THE SEPARATE COLLECTION OF PAPER AND CARDBOARD

Examine the table from the 29th COMIECO Report (National Consortium for the Recovery and Recycling of Cellulose-Based Packaging), which presents data on separate waste collection of paper and cardboard across Italian regions for the **years 2021–2023.**

Region	2021 (t)	2022 (t)	2023 (t)	Δ 2022/2023	%
North					
Piedmont	299,267	313,423	313,592	169	0.1
Aosta Valley	9,293	9,981	9,914	-66	-0.7
Lombardy	578,253	584,846	586,652	1,806	0.3
Trentino-Alto Adige	78,643	76,870	76,716	-155	-0.2
Veneto	292,647	287,908	316,447	28,538	9.9
Friuli-Venezia Giulia	70,656	70,333	72,064	1,731	2.5
Liguria	102,609	102,407	110,740	8,333	8.1
Emilia-Romagna	393,063	401,699	412,695	10,996	2.7
Center					
Tuscany	315,201	323,092	327,846	4,754	1.5
Umbria	58,097	62,826	63,400	574	0.9
Marche	108,970	104,051	101,779	-2,271	-2.2
Lazio	371,292	368,046	378,025	9,979	2.7
South					
Abruzzo	72,734	70,706	69,769	-938	-1.3
Molise	10,833	10,973	11,807	834	7.6
Campania	222,426	223,647	233,795	10,147	4.5
Puglia	200,485	198,915	203,584	4,670	2.3
Basilicata	29,746	26,659	27,719	1,060	4.0
Calabria	92,813	94,299	95,945	1,646	1.7
Sicily	204,717	222,456	244,418	21,962	9.9
Sardinia	96,830	93,215	96,164	2,949	3.2
Italy	3,608,574	3,646,352	3,753,070	106,718	2.9

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Now select the data for your region and convert them into appropriate charts using either traditional methods or a spreadsheet program (such as Excel). Additionally, create graphs to compare results by geographical area or between regions.

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WHEN DISCUSSING ENVIRONMENTAL ISSUES, IT IS OFTEN DIFFICULT TO APPRECIATE THAT MAJOR GLOBAL ACHIEVEMENTS ALSO DEPEND ON THE EVERYDAY AWARENESS AND ACTIONS OF INDIVIDUALS.

To promote this idea, **every year in April, a week-long initiative is held to explore and better understand the recycling of paper and cardboard**. The programme features a variety of events aimed at schools, the general public, professionals, and opinion leaders.
Gather information on this initiative and either organise a visit to one of the scheduled events or create a short multimedia presentation on the most interesting activities.

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6. HISTORY OF WRITING MATERIALS

What surfaces were used for writing or drawing before the invention of paper? You have probably heard of clay or wax tablets, papyrus, and parchment.

Use the QR code in your book to conduct a brief research on this topic. **Keep your findings within 200 words.**

Then, compare your results with those of your classmates.

EXAMPLE IN 170 WORDS

The history of writing materials began with inscriptions on stone and clay in ancient Mesopotamia (around 3500 BCE). The Egyptians developed papyrus around 3000 BCE, made from strips of the papyrus plant. Later, the Greeks and Romans also adopted it.

In the 2nd century BCE, in China, paper was invented, traditionally attributed to Cai Lun in 105 CE. This innovation, made from mulberry bark and rags, spread gradually across Asia and the Islamic world, reaching Europe via Spain in the 12th century. Meanwhile, parchment, made from animal skins, was already in use in Asia Minor by the 2nd century BCE and became widespread in Europe during the Middle Ages, eventually replacing papyrus.

With the invention of the printing press by **Johannes Gutenberg in the 15th century, paper became the dominant writing material**, driving the spread of books and literacy. In the 19th and 20th centuries, industrial paper production increased, making it cheaper and more accessible. **Today, despite the rise of digital media, paper remains an essential material with multiple uses.**